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THE PROBABLE FUTURE USE AND OWNERSHIP OF RANGE LANDS

FROM

THE WESTERN RANGE—A GREAT
BUT NEGLECTED NATURAL RESOURCE

FOREST SERVICE
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THE PROBABLE FUTURE USE AND OWNERSHIP OF RANGE LANDS

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An attempt will be made here to redefine problems created by maladjustments in form of use and ownership of range lands, the solution of which is vital if the ranges are to realize permanently their possibilities. In addition, the approximate magnitude in terms of area of each separate problem will be estimated; possible methods of action to meet the problems will be examined; and solutions proposed. A summary of the entire estimated task of needed changes in land use and land ownership, and particularly of that part which public agencies should assume, is also a part of the section.

THE PROBLEMS OF USE

THE BACKGROUND

Many forces and movements, the details of which are set forth in other sections of this report, long since combined to create serious maladjustments in the use of millions of acres of western lands. Reviewed briefly, these forces include (1) the tremendous westward surges of agricultural occupation with multitudes of individuals frantically seeking out and competing for every acre of land that conceivably might produce a crop of grain; (2) the comparable mushroom growth of the range livestock industry, with each owner fighting desperately for grass, lest someone else should obtain it first; (3) the spirit of the pioneer (expressed accurately in public-land laws) to gamble with nature, with economic forces, with competitors, to make a quick killing by raiding the stored accumulation of resources; (4) the belief in bigger and better as an end worthy in itself; and (5) the lack of understanding of true public values involved, such as those represented by watershed protection and wildlife range.

When the inexorable process of deflation set in, the penalties began to pile up for unwise dry farming, for exploitative use of ranges, for abuse of vitally important watersheds, for overexpansion and overproduction of grain and animals, for unstable individual and community ventures, for overelaboration of local government and overextension of public debt. Naturally most thought and effort, both public and private, was directed toward maintenance of the status quo, rather than toward frank recognition of basic structural weaknesses in the edifice of western crop agriculture and range use, or orderly and planned means of cure.

Today, as the cumulative effects of the past have been accentuated by drought and depression, it is readily apparent that a truly permanent and self-sustaining civilization is impossible in many parts of the western range country unless a planned effort is made to work out widespread readjustments in use of land. In these read-

justments, the problem which stands out most clearly, as other sections of the report show, is that of restoring uneconomically and destructively cropped lands to range use.

THE PROBLEM OF UNECONOMICALLY CROPPED LAND

On a large area of level or gently sloping lands, dry farming has been attempted and has proven uneconomic. The illusion that dry farming had an almost unlimited field for economic application arose from a combination of using virgin soil, enjoying abnormally favorable climatic conditions, and selling in markets that could absorb whatever was offered. The pressure of the World War, which made production through dry farming not alone an opportunity for profit, but a patriotic duty as well, inevitably resulted in breaking with the plow millions of acres which had been the cream of the western range lands. Great areas of the short-grass plains east of the Rockies, in the western Dakotas, in western Nebraska and Kansas, in eastern Montana, in central and western Texas, that once were excellent range, are now unneeded and uneconomic cropland. So, too, are large areas in central Washington, central and eastern Oregon, and in Idaho and Utah. Furthermore, the range values of these lands are gone and can be restored only at some expense and waiting; the crop values are negative.

In addition to these large areas of dry-farmed wheatlands, the problem involves hill farms in the central valley foothills of California, where only the most temporary combination of favorable climatic factors, virgin soil, and market demand could make crop use a success, and where cultivation has resulted in erosion, with depletion of the soil, and damage to watershed and other public values.

Most of this type of land was excellent range, most of it is definitely uneconomic for crops, and most of it can fulfill its true and permanent economic function only if restored to range use. In all such instances, systematic working out of this problem is highly important to the range-livestock industry, not only because the forage-producing capacity of the lands is high, but because it will restore to use many natural range units unencumbered by a patchwork pattern of cropped and fenced rectangles.

THE AREAS TO CHANGE FROM CROP TO OTHER USE

The Resettlement Administration has made preliminary estimates of the acreage of land in farms within certain problem areas, much of which should be encouraged to change to noncrop use, and has developed an initial purchase program. The total area of these project farms within the 17 range States is 44,413,000 acres. Of the total, about 2 million acres are in forest belts and should revert to timber production. Of the remaining 42 million acres, about 11 million are croplands and 31 million are range land. Nearly two-thirds of the cropland, or 7.2 million acres, are regarded by the Resettlement Administration as permanently submarginal for crops.

The program of the Resettlement Administration involves purchase of lands of this type, as the most effective means to bring

about desirable changes in use. Thus existing public policy contemplates public ownership, at least, as an intermediate step, for such lands.

Outside of these problem areas a large acreage of land has been cropped at one time or another, and while much of it is no longer under cultivation, it is still in private ownership and may be cultivated again. Part of this has already been abandoned because of low productivity. At least 8 million acres of these scattered tracts of croplands are in such condition that public ownership is the logical outcome.

General information developed through the present studies indicates that the area of submarginal croplands of these types which will need to be taken over by public agencies, including both present problems areas and other scattered units, will reach a minimum of 15 million acres.

THE PROBLEM OF COORDINATING RANGE USE WITH THE NATIONAL AGRICULTURAL-ADJUSTMENT AND LAND-USE PROGRAMS

The center of gravity of crop agriculture lies in the Middle West. Whatever changes in production are worked out there from a plan-wise approach to the national crop-adjustment problem, will automatically affect other regions which now produce similar crops. If, as is possible, lands devoted to crops are changed to pasture, with a resulting increase in production of meat animals, the number of meat animals required for estimated consumptive needs will be less from the western range country than in the past or the present. A reduction of this sort might be absorbed by the generally lighter stocking of the ranges that, as this report shows unmistakably, is essential to preserve the range itself. Or it might be absorbed through nonuse of certain range areas; or by increased production of supplemental feeds and a shorter season on the range; or by a combination of lighter stocking, nonuse, and shorter grazing season. The general agricultural crop adjustment plan is not now complete and authoritative enough to justify any final conclusion, but it is necessary to recognize that changes in use of range lands over and above those suggested in this report may well result.

OTHER USE ADJUSTMENT PROBLEMS

The report indicates that, on considerable areas, outstanding public values in watershed protection and range for wildlife are deteriorating through overuse by domestic stock. It is possible, and indeed probable, that on part of this land nonuse by domestic livestock may be required, although insufficient detailed work has been done to furnish a final and conclusive answer. In addition, certain privately owned lands are needed for rounding out natural range units within and adjacent to the national forests.

The entire question of the most effective form of ownership to protect public values on range lands of these classes, whether involving nonuse or not, will be examined later in this section. It can best be seen as a whole, rather than through separate study of the parts.

THE PROBLEMS OF PRIVATE OWNERSHIP

OWNERSHIP PATTERN—CAUSES, EFFECTS, AND RESPONSIBILITY

Many forces, set forth in detail elsewhere in this report, have combined to create a crazy-quilt pattern of range-land ownership, ill-adapted alike to the requirements of the range livestock industry and of the public. These forces include (1) ill-advised public-land laws, well adapted for the humid eastern United States but unsuited for the arid range country; (2) the struggle by individual stockmen for security through ownership of the ranges; (3) forces of competition within the range-livestock industry, which compelled land ownership; (4) cumulative depletion of the range with reduced grazing capacity; (5) growing and more complex pressure of public needs on private rangelands; (6) excessive unit investments in range land, forced by competitive bidding against other stockmen and dry farmers; (7) too easy credit—a temptation to unwise investment in range-lands at prices above their true value; (8) high taxes caused by overelaboration of local government; (9) high prices set by State or Federal laws for sale of State lands; (10) high interest rates; (11) lack of knowledge of true grazing capacity and true value of low-grade lands; and (12) speculation in range lands.

Any ownership pattern resulting from the unplanned and undirected operation of these contradictory forces must necessarily have far-reaching effects.

Merely to list the undesirable consequences which this ownership pattern causes or helps to cause is to indicate the complex and far-reaching nature of the ownership problem. Among the effects, discussed elsewhere in the report, are depletion of the range itself; widespread overcapitalization, which coupled with range depletion makes successful operation difficult; uneconomic and unbalanced individual livestock operations, in turn leading to unstable communities; shifting and unstable private ownership; a vicious circle of tax reversion, resale to private ownership, and more tax reversion; another of foreclosure, resale, and more foreclosure; automatic ignoring, owing to exploitative use, of public values inherent in the lands; difficulty in management on the range; creation of an enormous task of range rehabilitation, to restore forage values, involving both cash outlays for reseeding, and great reduction in stocking; and creation of an additional task of recapturing watershed values, involving cash outlay for erosion control as well as reduction or elimination of stock.

The net effect of range depletion and the high cost to restore forage and public values is to place a difficult or impossible task before many private owners; that is, to make additional expenditures in the face of decreasing returns.

Superficial examination of the outward and visible facts of range depletion, unworkable ownership pattern, and widespread overcapitalization of the range livestock industry may readily lead to the conclusion that the maladjustments now so evident are due primarily to the lack of knowledge or acquisitiveness of those engaged in the business. That stockmen might have helped to avoid or to solve some of the present problems in their early phases is true. A more conservative pattern of business management; less gambling on the

big year; less reliance on mere numbers of stock owned; more careful attention to the range as part of the productive plant—all these would have helped. And it is far from clear that group action by stockmen has focused as effectively as it might on constructive legislation for public lands, and on the use of public credit to stabilize the business on a conservative basis. But study of the long historical process which has finally resulted in present-day difficulties shows that public inattention to the range resources and to the civilization built around it, has also underlain the whole process.

For example, until 1934 no start was made by the Federal Government to manage the public domain constructively. Even then only about one-half was reserved, and on that half eventual passage to private ownership was still contemplated. This action was delayed for a third of a century after the stockmen users themselves had recognized the need for Federal reservation and management. It was delayed for a quarter of a century after a successful system of range management on public lands in the national forests had demonstrated its worth.

Not only that; in other respects as well, both Federal and State Governments have failed to comprehend the stockmen's difficulties and take obvious steps to enlighten them. The land-disposal laws of the Federal Government still stand on the statute books, decades after their inapplicability to arid and low-grade western range lands was made clearly evident. Over half a century ago it was recommended that public lands in the arid regions be passed to private ownership in economic-sized units, adequate to support a family. No such provision ever became a law. For decades the range livestock operator paid excessive rates of interest on borrowed money, and belated public action to protect him came in the main after he was committed to debts that were ruinous. The producer has always been at the mercy of the buyer in the major marketing centers and even today the public protection and assistance afforded him seems none too complete. Public agricultural-research agencies, concerned primarily with the problems of crop agriculture, have paid relatively slight attention to furnishing the indispensable factual basis for more intelligent private-range management. Some States, through failure to manage their range lands constructively and through unjustified prices for their lands, have added to the problem of private ownership, and States and counties as well, through building costly structures for local government, based on high tax rates, and through repeated repassing of tax-reverted lands to private ownership, have further contributed.

WHY SHOULD THE PUBLIC BE INTERESTED?

A simple listing of these errors of omission and commission by the public furnishes in itself justification for public interest in and attention to the whole problem of the range resource and the ownership problem which is a part of it. Even though recognition of the problem is belated, the most elementary considerations of equity between the Government and its people dictate an attempt to repair damages to which public neglect has contributed.

But there are other forceful and affirmative reasons for analysis of the ownership problem.

THE PRIVATE OWNERSHIP PROBLEM IS REAL AND NOT SUPERFICIAL

Although depression and drought have accentuated and thrown into sharper focus the problems of ownership of range lands, drought and depression did not create the problems. Nor will their absence remove the problems. Earlier sections of the report have sketched the history of the unplanned and uncontrolled development of the range livestock businesses, of western crop agriculture and its dry-farming phase, of the consequences of the operation of the public-land laws, of the unwieldy and top-heavy capital investment structure forced on the individual stockman by competition for range, all of which tended toward overstocking and resultant range depletion.

What happened is clear enough. In many cases—perhaps extreme ones—an individual started with a small herd. He had to acquire a home ranch to produce supplemental feed, meanwhile depending on public range for part-time feed. The investment in the ranch led to increase in his herd. Other owners competed for the public range he had enjoyed. His only solution was to acquire range lands of his own, that he might be assured of essential feed. He borrowed to acquire the range. Taxes and other costs were added to his cost of production. He moved in an ever-climbing spiral of more stock in an effort to meet his fixed costs, thus heavier stocking, thus poorer condition and lower selling prices, thus depletion of his productive capital—the range.

Where prices at which States were required to sell range lands were fixed, or where the price for range lands was fixed by competitive bidding for dry-farming use, the stockman paid a price bearing little relation to the true value.

He was far from being a free agent. He would have been much better able to operate profitably without the load of range land, thus to reduce his fixed investment and annual costs and thereby increase the proportion of his total capital investment represented by his breeding herd. But competition drove him to attempt self-protection unwisely through ownership.

This whole process, which has operated in many places and for many years, has an inevitability, once started, which small remedies and minor tinkering can hardly alter. The individual is caught in a trap and only with difficulty can halt or reverse the process that has engaged him therein, however clearly he may recognize that he is committing economic suicide; that doing things obviously against his own interest, such as overstocking and depreciation of capital stock—the range—can lead only to one end. When lands are handled primarily under pressure of real or apparent immediate financial needs rather than as a permanent productive instrument, then clearly a real problem of private range-land ownership exists.

By no means all stockmen have been caught in the process sketched above. Many were sufficiently free of compelling financial pressure so that they might have managed their ranges more conservatively, but the evidence is that few have done so. Regardless of ability or inability to manage conservatively, the end result of overstocking has been range depletion, one of the major reasons for present ownership problems.

CONTINUED WASTAGE OF BASIC RESOURCES IS INTOLERABLE

In any event, an attempt to weigh the relative responsibility of private owners and public agencies is not the issue, because the private-land problem is one affecting not alone the individual but the public as well. For public policy can hardly tolerate continued drifting toward eventual destruction of the range resource, around which the economy of much of the West is built.

The mere fact that the cash value of the forage produced per acre per year from the lower grade range is not high, does not obscure the fact that with hundreds of millions of acres involved, the aggregate value is high. Even where destruction of the range resource does not affect other values such as watershed, game, and recreation, preventable destruction of a basis of national wealth clearly cannot be accepted. Over and above all other considerations stands the fact that the public must, in case of need, step in to protect itself against loss of a basic source of primary wealth.

THE SOLUTION MUST BE A JOINT UNDERTAKING OF PRIVATE AND PUBLIC OWNERSHIP

Since the present difficulties of too much low-grade land in private ownership, and too little attention to much of the land in Federal, State, and county ownership, have developed largely through lack of any or of the proper public action, clearly the solution must come through a reconsideration of the existing ownership pattern.

This study has established ample evidence that the whole job of ownership and constructive management of the range area of 728 million acres is a partnership undertaking. The conclusion is here advanced that primarily the public function is to help to create conditions under which private ownership of the better range lands can continue, but with a more workable chance to function successfully than in the past. Although in many places private ownership heretofore has conserved neither the public values of watershed and wildlife nor the private value of the range, it by no means follows that all private ownership has so failed, nor that with more public effort to determine its true field, private ownership will not be more able to conserve both private and public values.

The questions then become: (1) What form should the unscrambling of the ownership pattern take, in order to give private ownership a more workable chance? (2) What means of public action are available for this broad purpose and which of these, in the light of experience, is likely to be most effective?

THE POSSIBLE MEANS OF PUBLIC ASSISTANCE TO STRENGTHEN PRIVATE RANGE-LAND OWNERSHIP

Problems of private range-land ownership, particularly of lower-grade lands, revolve largely, though not wholly, around financial difficulties in balancing costs and returns within the competitive structure of the business.

THE POSSIBILITY OF REDUCING CARRYING COSTS

Of the factors bearing on the chance for success of the range-livestock business, two stand out as of major weight in the financial overload now carried by many operators. They are the high investment per acre, when compared to true income value of low-grade lands, and the high level of local taxes on such lands.

Reduction in costs of local government has long been recognized as desirable and studies have shown unmistakably that consolidations of units and functions could increase rather than decrease local governmental efficiency. But such rigid things as local pride, intrenched bodies having taxing powers, existing laws, outstanding bonds, resistance to change, and the growing tendency for State and Federal Governments to take over county functions and obligations, have combined to prevent many fundamental changes in local taxation.

Altogether it seems unlikely that progress toward solution of this great problem, which affects all private lands and property, will be rapid enough to be effective in solving the immediate problem of lower-grade private range lands. And with existing commitments, it is far from sure how far reductions can go.

POSSIBILITY OF DECREASING CAPITAL INVESTMENT IN RANGE LANDS

That capital investment per acre in range lands is often excessive is as evident as that local taxes are often too high. In both cases a heavy deflation is needed to give private ownership a fair chance at success. But the forces resisting deflation to a workable basis are powerful, since individuals, like local authorities, tend to hang on to the end and attempt to maintain an unworkable set-up. Even though an eventual loss must be accepted, in the one case by local government, in the other by individual owners, the process of deflation is slow and irregular. While it is under way, the basic resource—the range—will necessarily continue to suffer.

So without attempting to say that these major problems affecting private range-land ownership cannot or will not be finally solved in a way to improve the opportunity for successful private range livestock operation, it may be concluded merely that an enormous problem of rebuilding exists, that a prompt and adequate attack is needed, and that methods of attack should be judged first of all by their immediate applicability.

POSSIBILITY OF ADDITIONAL PUBLIC ASSISTANCE IN CREDIT AND MARKETING

The range-livestock business has been subject to various hazards of which excessive costs of range-land ownership is only one. The Federal Government has already recognized, through creation of the Farm Credit Administration and its subsidiaries, the need of livestock producers to be freed from the excessive interest rates of private banking, and to have access to credit better adapted to operating needs. This venture into the field of public assistance is already a going concern. In the industrial problem of marketing, also, there is a field in which public assistance is clearly desirable to ensure that the producer is not wholly at the mercy of agents

and packers. But in neither field does such assistance aid greatly in solving the problems of private ownership of low-grade lands or of those possessing high public values.

POSSIBILITY OF PUBLIC ASSISTANCE THROUGH INCREASE IN RESEARCH AND EXTENSION

Another section of the report discusses in detail the unsolved problems affecting range lands and the range livestock business, and proposes a more adequate research program to redeem this part of the public's responsibility.

A complete program will, over a period of years, greatly assist operators in the conduct of their businesses. But research and extension can hardly solve immediate and pressing ownership problems.

POSSIBILITY OF REGULATION

Regulation by law to compel the individual owner to manage his land constructively and conservatively, so as to preserve both forage and public values, might well be effective if mistreatment of land were due primarily to ignorance or willfulness and the owner were financially able to do the things required by law to remedy abuse. But the private range-land problem was largely created and continues to exist precisely because many owners were not wholly free agents, financially able to manage constructively. As a general means of effective public action, regulation by law can hardly be looked on with confidence. Quite possibly in the long run, when private ownership of range lands is on a far more stable basis and most land is managed to preserve its values, regulation may be a useful tool to bring a stubborn minority into line with the general level of private ownership; but at present any general attempt at regulation would almost certainly be premature. To be effective, the legal requirements would include the very things private ownership is in large measure financially unable to do.

POSSIBILITY OF SUBSIDIES

Subsidies, on the contrary, would give to the private owner some cash return in recognition of the fact that many range lands are vested with definite public values, which it is vital to preserve. The giving of a subsidy and the acceptance thereof constitute in effect a contract between the public and the owner, in which the recompense for public expenditures is obtained in the form of better land condition.

In whatever form the contractual quid pro quo appears, its existence is implicit. Whether the Federal agency determines in detail the things to be done, and checks performance, or whether it merely assumes that the subsidy will automatically cause the desired things to come to pass, the prime purpose in any event is to cause to happen certain things—desirable in the public interest—which otherwise would not happen.

The problem of public assistance or subsidy to owners in management of their land is inherently complex and elusive. A variety of Federal-aid ventures have long been in operation, including the

highways, the agricultural colleges, private and State forest lands, and others. In all of these one common denominator appears: The Federal Government deals with and through a strong professional State administrative organization, so that the relationship is between single units of Federal and State Government and is on a professional basis. That there may be a place for Federal aid as a means of helping to solve problems of private range-land ownership is clear. But the barriers to immediate adoption of this as a general formula are evident. At present there are no State governmental organizations, professional in character, to deal with in the field of range-land management. As an immediate step, the Federal agency would necessarily deal directly with a multitude of individual owners, thus setting up a relationship undesirably ignoring the States. Certainly adequate State agencies could be developed over a term of years, as the States assume their part in the whole range-management undertaking, but such a process takes years, as experience in other fields shows.

The stockmen are organized in trade associations, varying in strength and character. But to deal with the livestock associations would be to expect a high degree of self-regulation, since the return to the Federal Government to offset the aid would be in the form of better condition of range lands. This could be obtained only by improving land-husbandry practices and the enforcing agency—the association—would consist of landowners who were regulating themselves. The record of self-regulation in other fields hardly justifies a strong conviction that it would be more effective in this. Thus, the inherent weakness of the subsidy as a weapon of attack on this sort of problem, and the innate defects of self-regulation seem entirely clear.

The need for subsidy arises because the individual landowner, in failing to do things in treatment of his property that it is in his own interest to do, has finally done injury to the public interest. In this situation public aid is justified, usually because the owner is in a more or less desperate situation in his own business. It comes to him necessarily as individual assistance, and unless it is coupled with tight regulation in use of land the results are unlikely to be satisfactory from the public viewpoint.

POSSIBILITY OF PUBLIC ACQUISITION

The record of both the Federal and State Governments in constructive management of range lands is decidedly inconsistent and spotty.

The Federal Government has for 30 years, through the national forests, conducted a large-scale demonstration in range management on public lands, during the course of which many constructive developments of major consequence have been worked out through trial and conflict, and the application of improved management developed by research and experience. And though the record of accomplishment is far from perfect, national-forest range management has, on the whole, been markedly successful; the mechanism and much of the technique have been worked out; and the development of a professionally competent and resident organization has set a workable pattern for similar public ventures.

But an even larger area of Federal range land—the public domain—has until very recently drifted with no pretense of administration, and has paid in depletion the penalty of long-continued neglect. Even now but half of this Federal property is in process of being placed under administration.

The Indian range lands, too, have suffered severely through overgrazing, though supervised by the Federal Government. It is only recently that more constructive policies and plans have been developed, looking to rehabilitation of this resource on all these lands, though some have been well handled for years.

Thus the record to date of the Federal management of range land is part reasonably good, part bad. The national-forest experience at least demonstrates what can be done and shows it to be within the capacity of the Federal Government to do an effective job.

The record of the States in management of their range land is on the whole discouraging. The general desire, largely set by Federal grant laws, to obtain immediately cash income and the handling of lands by State bodies having a real-estate point of view, have meant exploitative use and range depletion on most State lands. Effective ownership and management of low-grade range lands, and those possessing public values, usually demands cash outlays as investment or administrative cost which may not be immediately returned through severance charges for forage.

In its financial ability to make the expenditures required to do the job thoroughly, the Federal Government has the advantage of outstanding financial strength. It has also unique and far greater opportunity to reimburse itself over a period for capital investments required to develop the range property and for current costs of administration, than does any other kind of ownership, private, State, or county. For any source of wealth, such as the range, produces commodities which, between the point of production and the final consumer, pass through the hands of many businesses. Each of these is subject to the operation of the corporation- or income-tax laws, and some part of the profit created at each step of the producer-to-consumer chain finally finds its way to the Federal Treasury. So, in addition to a direct and equitable severance charge for forage, which the Federal Government can collect in common with other kinds of ownership, and which in effect can be used to help defray costs of ownership and management, the Federal Government through other and indirect means can reimburse itself and even make a profit as a landowner.

Some States have already adopted the income tax as a revenue-producing mechanism, and so enjoy in part the same opportunity as the Federal Government to obtain revenue from each step in the progress from production to consumption. But, since a large part of the products of the range finds its way into interstate commerce, no State can well be on competitive equality with the Federal Government in this respect.

Thus, except where costs of range-land ownership are grossly above the direct severance charge, the Federal Government, in particular, in preserving range values through ownership and constructive management, accomplishes several things. In the narrow and restrictive sense of repaying its own Treasury for costs, it can usually come

out at least even. It preserves a primary source of wealth, both of forage and of public values—part of the physical basis for national self-support. In maintaining unimpaired a base capable of supporting population, it prevents to that extent the piling up of unemployed and relief cases, and in the end avoids the inevitable public cost of supporting directly such people.

Public, and particularly Federal, ownership thus appears to be on the whole the most effective weapon of attack on the problems of private ownership of low-grade range lands, and of deteriorating range lands having high public values.

Adoption of this working method is, moreover, simply an expansion of existing policies, long recognized in undertakings of the Federal Government. The land-purchase program of the Resettlement Administration is dealing with submarginal dry-farmed lands, with eroding hill farms, and with depleted range lands. The purchase program for national-forest purposes has recently recognized depleted range lands with high watershed values as eligible for operations of the Clarke-McNary law. In both cases there is recognition that the public must protect both itself and its citizens as property owners, where the latter are unable to do so.

A balanced judgment of the efficacy of public acquisition and management as an immediate means of attack on the ownership problems must take into account both favorable and unfavorable considerations. On the one hand, public acquisition strikes directly at the problems, is established as a function and operation of government, and management of public land has been successful on the national forests. On the other hand, an adequate program has been established neither by the States nor the Federal Government, the vital question of jurisdiction over Federal range lands is not yet settled, and the record of public range-land management is spotty.

But on the whole, if used to supplement other desirable public action, public acquisition has a large and irreplaceable part in any comprehensive attack on the range-land problem. In other words, as public acquisition frees private ownership of lands unsuited for that status, even with public assistance, the better lands remaining in private ownership can be more readily managed in a constructive way. Public assistance on them should then be more effective.

In this conclusion, no question of philosophical or political principles or dogma is involved. It is simply a case of a realistic approach to the actualities of a situation, using the most effective means of action available. Public land ownership is not a panacea for all the ills of the range-livestock industries or of range depletion, but it is one method of attack.

INADEQUACY OF DATA PREVENTS ACCURATE DETERMINATION OF SIZE OF PROBLEMS

The processes which have resulted in present problems of private range-land ownership are clear enough. And the reality of the problems is evident. But to determine where, how much, and what lands are unsuited for permanent private ownership and management, and which should therefore come into public ownership is a far more difficult matter. Prior to this study, no comprehensive

attempt was made to appraise the range-land problem as a whole, and even the basic facts as to areas, distribution of ownership, carrying capacity of major areas and types, are available only as approximations. Studies of the economics of the industry as a whole, and of the economics of private range-land ownership in particular, have been fragmentary, made on different bases, and at different times. Indeed, a large part of the effort to obtain facts applicable to private lands has been devoted to the animal-husbandry phases of the range livestock business, rather than to the land-management or economic phases which have centered on public lands. The possibilities of improving the opportunity for business success of range livestock operators through various forms of public and private action have been but partially explored.

Thus, the attempt here made to move from the general to the particular, and to approximate the size and location of the future range-land ownership distribution, should be regarded as simply a first trial, subject to refinement as more detailed surveys and studies of the range country become available. That a basis different and superior to the one here used could be developed is quite possible. But with the scanty information available, the basis adopted has appeared to give at least an approximation of the job ahead. This phase of the entire study is a first exploration, and necessarily should be followed by a great deal of further study.

ESTIMATED SHIFTS IN RANGE LANDS SUBMARGINAL FOR PRIVATE OWNERSHIP

One problem, as has been said earlier, concerns low-grade lands, already depleted, where the costs of ownership and of restoration of productivity make continued destructive exploitation under private ownership probable or inevitable, and permanent and constructive private ownership doubtful or impossible. These are lands where private ownership cannot be expected to do the job of restoration and constructive management. On such lands, in the main, carrying costs in the form of taxes and interest are disproportionately high when compared to the true income value from the lands. Thus a vicious circle of overstocking, resulting depletion, and then continued overstocking has often appeared to the owner the easiest way out in his efforts to obtain feed at a cost he can afford. Unaided escape from the circle, requiring reduction in stocking and cash outlay for range restoration, is unlikely.

THE BASIS FOR ESTIMATING NEEDED SHIFTS FROM PRIVATE TO PUBLIC OWNERSHIP

The section on financial handicaps has shown that range-land ownership is one of the major elements of the capital-investment structure which contributes to financial rigidity of the business, and may be so high as to reduce the proportion of the total capital investment represented by breeding herds to a point that losses instead of profits follow. It has shown, too, that the ratio between investment in breeding herds and other capital items, largely land,

has decreased from 1 to 1½ in the nineties to almost 1 to 6 today. It is perfectly clear that the frozen investment in land has become so excessively high that an impossible burden of producing cash income is placed on the breeding herd. Investment in range land is the element of the capital structure most readily affected by public action.

The absolute or proportionate part of the total capital investment which can safely be in range lands depends, it is evident, on the relative competitive position of the individual livestock business. Thus, for example, too large or too small operations within a given region, all else being equal, are at a competitive disadvantage with businesses of a size that experience has proved to be most efficient. Again, all businesses within a region may have a competitive freight differential against them in reaching major markets.

So the key to an appraisal of how much range land private ownership can carry successfully lies not so much in a consideration of the land itself as in the present relative regional opportunities for profitable range-livestock businesses. That is, the more favorable the chance for the business as a whole, the greater the chance of the operator to own and manage his own range; and conversely, the less favorable his chance as a whole the greater is the need for public ownership of the range as a means of stabilizing the business and placing it on a competitive parity with other regions.

Public action in furnishing credit and marketing facilities blankets the range region, with equal service in each part of the whole. But from this approach to a determination of the true field for additional public ownership of range land, there will necessarily be differential action in the several States or regions.

In breaking down the problem of opportunity for profit in the range-livestock business at least five groups of factors must be considered, covering forage production, general production costs, feed costs, stability of the ranch unit, and marketing. The first group of factors, in detail, includes:

1. The average volume of forage—that is, whether the number of acres per head is large, medium, or small.

2. The condition of the range and cost to rehabilitate, both varying greatly in different types and regions.

3. The susceptibility to mistreatment—whether the range type can or cannot withstand punishment.

4. The usual forage composition—whether the feed is adapted to turning off fat stock and whether the range is suitable for different classes of stock.

5. The dependability of forage—whether there are wide fluctuations in different years because of climatic variations.

6. The frequency of severe winters and severe drought—whether saving of large quantities of feed is necessary as a safeguard against heavy losses.

7. The possibilities of yearlong range operations—whether a long, medium, or short period on the range is possible.

The second group of factors dealing with costs of production in other than feed items includes:

1. The investment per head in land and improvements—the base on which interest must be earned.
2. The general level of indebtedness—the degree to which immediate financial needs control.
3. The general level of local taxes.
4. The cost of management on the range—whether intensive handling and considerable investment in range improvements are required.

The third group of factors, having to do with the cost of feed, are:

1. The cost of leased range—the degree to which the operator is at the mercy of the landowner, and accessibility of the range.
2. The cost of supplemental feed, whether produced on home ranch or purchased.
3. The natural set-up for balanced operation—whether range lands best adapted for different seasons of use are in balance with each other in quantity and location.
4. The possibility for balance with agricultural operations—whether byproducts of crop operation are available.
5. The dependability of tenure of owned or leased ranch and range.

The fourth group of factors, dealing with efficiency of livestock operations, includes the following four:

1. Average size of operation—whether too small, too large, or within the zone of greatest efficiency.
2. The general level of skill of operators, including the degree of owner attention to the business.
3. The general level of losses on ranch and range from various factors.
4. The degree of attention by research agencies to problems of range-livestock businesses.

The final group of factors is concerned with two important details of marketing and transportation:

1. Whether the range is accessible to a single or to more than one major market.
2. Relative freight cost compared to other producing region.

A summation of all of the above factors determines the relative advantages and disadvantages of different range types.

The results of many studies of the range-livestock business supplemented by the knowledge of men thoroughly familiar with the entire western range country have been combined in rating the relative favorableness of the nine major-range types. Each factor in each type was rated as above average, average, or below average in favorableness. For example, nearness to major markets rates as above average for the tall-grass type, below average for the sagebrush-grass type, and about average for the Pacific-bunchgrass type.

The number of pluses, minuses, and plus-minuses totaled for each type, gave a relative weighted average. The tall-grass type, for example, showed 17 of 22 factors as favorable, and one as average, whereas the southern desert-shrub type had three factors favorable and one average.

RATING OF OPPORTUNITY FOR PRIVATE MANAGEMENT IN DIFFERENT FORAGE TYPES

The results, expressed as a single figure of relative favorableness for the different range types, serve to separate the types into four groups, as follows:

	<i>Percent</i>
Most favorable:	
Tall grass-----	76
Short grass-----	65
Moderately favorable:	
Pacific bunchgrass-----	45
Woodland-chaparral-----	45
Semidesert grass-----	40
Slightly favorable:	
Piñon-juniper-----	27
Sagebrush-grass-----	23
Least favorable:	
Salt-desert shrub-----	17
Southern desert shrub-----	12

These ratings and groupings are necessarily approximations. They do not and cannot give more than a broad picture of the absolute degree of opportunity for private range management in any single type, but they do give a fair approximation of the comparative advantages of the several types.

This plan of rating and, therefore, its results are based on the present situation. In utilizing the results as a criterion for judging the future place of private range-land ownership, the assumption must be that the rating of the individual factors—which combine to make the total rating—will not alter markedly. That this is a fair assumption is evident if the 22 factors enumerated above are classified into two groups—(1) the fixed factors dealing with the character, geography, and relationships of the range itself and (2) those dealing with political and economic condition and relationships. If that is done, the latter or theoretical group comprises only five factors—the investment per head in land and improvements, the general level of indebtedness, the cost of leased range, the dependability of tenure, and the general level of local taxes. Of these five, the two most important—investment in land and improvements, and level of local taxes—have already been characterized as likely to alter but slowly. The present situation, therefore, as regards these is justified as part of the basis for the rating of private opportunity for successful private range management.

The significance of the figures in the above tabulation, as a guide to the solution of the problem of future distribution of range-land ownership, is readily apparent from the findings of the section of the report dealing with financial handicaps of the range-livestock industries. A major conclusion of the analysis was that since private ownership of range lands decreases the proportion of the total capital investment in the breeding herd and thereby increases the financial rigidity of the business, the justifiable ownership of range land depends primarily on the business success of the venture as a whole.

It follows then that in the tall-grass and short-grass types, rated as 76 percent and 65 percent favorable for private range-livestock operations, the individual operator can reasonably be expected, since

he clearly has the opportunity, to own and manage constructively the great bulk of the range land he uses.

No definite and authoritative guide exists that will solve the problem of just what proportion of the total range in these types is adapted for private ownership. In a comparable study of the ownership problem of forest lands (*A National Plan for American Forestry; Future Distribution of Forest Land Ownership (154)*), it was found after careful analysis that in the most favorable region for private forestry about 15 percent of the total land either was required for public purposes or was enough lower in quality than the average for the region so that it was ill-suited to private ownership.

This conclusion for forest lands favorable for private forestry cannot of course be automatically applied to range lands. In each of the two types, however, it may be assumed that there is a zone or band, ranging from perhaps 5 to 25 percent within which the true scope of public ownership lies. Part of the tall-grass type, for example, is on the breaks of several rivers and so is ill-adapted to private ownership. That the lower limit cannot be 0 percent is evident because some lands will certainly be needed for wildlife, or other public purposes. That the upper limit cannot be high is clear because the lands have on the whole demonstrated their suitability in private ownership, and because no large areas of critical watershed lands—relative to the acreage of the types—are found in this study. Further detailed study may show that 15 percent of the total type area is too high or too low. It is used here simply as an approximation of the part of the whole type probably destined for eventual public ownership.

At the other end of the scale of favorableness, the southern desert-shrub type, rating 12 percent, is clearly one within which private ownership of range land is financially justified to but a slight extent. With a generally unfavorable business opportunity, extensive investments, and annual costs on range lands would tend strongly to tip the balance toward losses rather than profits. But even in so generally unfavorable a region there are areas so much superior to the regional average as to be adapted to private ownership. Favorable location, or better than average soil, can readily make this difference. Here again the proportion of the whole type that private ownership can handle cannot be fixed definitely. In the least favorable forest region it was found that 10 percent of the total now privately owned was suited for permanent private ownership. Here a band of perhaps 5 to 15 percent of the total range type area will be likely to remain in private ownership. Lands needed for home ranches and islands of exceptionally high productivity would probably account for 10 percent of the type area, and that proportion is adopted as an approximation for the least favorable group of range types.

For the type groups of intermediate opportunity it is assumed that 40 percent of the present total private range land in the Pacific-bunchgrass, woodland-chaparral, and semidesert-grass types might eventually be acquired by public agencies, and 65 percent of the piñon-juniper and sagebrush-grass type.

Since this method is only an approximation, the results will surely be modified as more detailed surveys and economic studies of private ownership are made. But the approximation indicates, if nothing else, that very large job of recapture through purchase which confronts public agencies, and is adequate justification for beginning an acquisition program.

PROSPECTIVE PUBLIC ACQUISITION

The areas of private land thus estimated as involved in future ownership distribution are shown in table 68. Open forest (43,568,000 acres) is omitted from this table since probably the highest potential use of most of these lands is for timber production; estimates of future private and public ownership of commercial forest lands have previously been published; and such of the open-forest grazing type now in private ownership as should be publicly acquired is needed for administrative purposes as indicated later in this discussion.

TABLE 68.—*Present areas and prospective future ownersip of present private land in major range types*

Range type	Present area private land	Area likely to remain private	Prospective shift to public ownership
	<i>Thousand acres</i>	<i>Percent</i>	<i>Thousand acres</i>
Tall grass.....	17, 271	85	2, 590
Short grass.....	148, 144	85	22, 222
Pacific bunchgrass.....	35, 913	60	14, 365
Semidesert grass.....	48, 425	60	19, 370
Woodland-chaparral.....	10, 640	60	4, 256
Piñon-juniper.....	20, 900	35	13, 585
Sagebrush-grass.....	34, 791	35	22, 614
Southern desert shrub.....	10, 643	10	9, 579
Salt-desert shrub.....	5, 251	10	4, 726
Total.....	331, 978	66	113, 307

Even though the 113 million acres indicated be too high or too low, clearly the range-land acquisition program should be a large one, if it is measurably to meet the public responsibility of caring for lands unsuited for permanent private ownership. Even the carrying out of the suggested program would leave to private ownership nearly two-thirds of the western range lands now privately owned. A rough check of this approach is possible by comparing the indicated percentage for private range land in each type group estimated to remain in private ownership, with the percentage of all land in the type which has passed to private ownership. The comparison is given in table 69.

TABLE 69.—Comparison by type groups of percentage of all nonforest range land now in private ownership with percentage now private estimated to remain private

Range type group	Land now privately owned	Present private land estimated to remain so	Eventual private land in entire type
	Percent	Percent	Percent
Tall grass.....	76.2	85	64.8
Short grass.....			
Pacific bunchgrass.....			
Semidesert grass.....	65.4	60	39.2
Woodland-chaparral.....			
Piñon-juniper.....	32.4	35	11.4
Sagebrush-grass.....			
Southern desert shrub.....	23.5	10	2.4
Salt-desert shrub.....			
Average.....	51.6	65.9	34.0

This comparison shows at least that the present level of investment in range lands is highest in the types where opportunity for private enterprise, and hence safety of owning range, is highest. Conversely, investment in range lands is lowest where private opportunity is lowest. So, in general, the experience of private range-land ownership checks with the findings of the rating plan as to relative favorableness of the several broad range types.

Data on present grazing capacity and percentage of depletion from virgin condition of range-type groups (table 70) also bear on the question of relative suitability for private ownership, because of the widespread tendency to tax lower-grade lands in a given area at the same rate as better lands. Thus the poorer tracts tend to carry disproportionately high costs. The percentage of depletion obviously reflects the need for reduction in stocking and for cash outlays to restore forage values, both of which spell a difficult financial problem for private ownership.

The data in table 70 indicate that the rating of adaptability of range-type groups to private ownership, which was used in estimating future ownership distribution, is relatively correct.

TABLE 70.—Present grazing capacity and percentage of depletion of range-type groups

Range-type group	Present area required per animal-month	Average depletion	Relative adaptability to private ownership
	Acres	Percent	
Tall grass.....	3.4	35	1
Short grass.....			
Pacific bunchgrass.....			
Semidesert grass.....	6.9	52	2
Woodland-chaparral.....			
Piñon-juniper.....	8.7	64	3
Sagebrush-grass.....			
Southern desert shrub.....	14.7	67	4
Salt-desert shrub.....			

ESTIMATED SHIFTS IN PRIVATE RANGE LANDS WITH HIGH PUBLIC VALUES

Another problem concerns the range lands having key values for such public purposes as watershed protection, game range, and recreation, on which private ownership cannot reimburse itself for the cost of conserving public values.

Under our form of government, workable mechanisms do not exist to reimburse an individual landowner for care or costs incurred to preserve or foster public values. A simple example is winter range for big game. If the herd is to be maintained, feed must deliberately be saved, and this means understocking rather than full or overstocking to domestic animals. The cost lies on the private owner and there is no ready way in which he can reimburse himself for his outlay. Not only that, but he is likely to be regarded as a bad citizen, lacking in public spirit, by groups interested solely in wildlife. He is on the spot, and individually is helpless. His private ownership is beset with difficulties, however he handles his land.

Even more complex is the situation of the owner of range land having high watershed value. Financial pressure for income commensurate with costs may force heavy use, resulting in range depletion, soil deterioration, and unsatisfactory water flow. If he refrains from overstocking, it costs him something. But the beneficiaries are perhaps a thousand miles distant, across two or three States.

These cases typify inherent defects in the institution of private land ownership and raise sharply the question whether some means can be found either to bolster up continuing private ownership or to place such lands in public ownership where the public can pay for the benefits received.

TO RESTORE AND CONSERVE WATERSHED VALUES

In another section of the report the watershed situation on range lands is presented. On a large part of the private range-land area watershed values have not been given the consideration which they justify. Misuse and abuse of private range lands at the headwaters of streams in Davis County, Utah, for example, are responsible for the destructive floods in that area. Millions of acres of other private range lands are badly depleted from overgrazing, and some from unwise cultivation, with the result that accelerated run-off and abnormal erosion are causing other destructive floods, endangering life and property and silting irrigation, power and municipal reservoirs. The problem on private lands centers primarily around areas which are eroding to such an extent that they are contributing silt to major streams which furnish the water upon which irrigation, industry, and other community welfare depend. The situation on private lands and the area which it appears should be acquired by the public in each watershed class in order to afford adequate protection is given in table 71.

TABLE 71.—*Watershed situation on private range lands*

Character of land	Total area	Part to be acquired by public
Principal water-yielding areas:	<i>1,000 acres</i>	<i>1,000 acres</i>
Contributing little if any silt.....	45, 617	11, 000
Contributing an appreciable amount of silt to streams:		
Severely eroded.....	7, 811	7, 000
Materially eroded.....	12, 937	10, 000
Areas of minor water yield:		
Silting streams:		
Severely eroded.....	96, 155	64, 000
Materially eroded.....	77, 682	26, 000
Not silting streams:		
Severely eroded.....	36, 823	-----
Materially eroded.....	56, 514	-----
Slight or no erosion.....	42, 008	-----
Total.....	375, 547	118, 000

PRINCIPAL WATER-YIELDING AREAS

The principal water-yielding range area, that is, the range part of the watersheds yielding 85 percent of the flow of major streams (183 million acres), is more than one-third in private ownership. It is possible that most of the 46 million acres of this area which is not contributing silt to streams might continue in private hands. Particularly important portions of this area, however, especially those on municipal watersheds or other high-value or high-erosion hazard areas, and especially parts severely eroded, should be brought into public ownership in order permanently to insure use which safeguards public interests. A conservative estimate would be one-fourth or around 11 million acres.

Of the entire principal water-yielding area, 60 million acres is eroding and contributing an appreciable amount of silt to streams. About two-thirds of this area is already in public ownership, or in Indian lands under control of the Federal Government, and requires principally change in use or restorative treatment.

Since the job of restoration of plant cover on key water-producing areas that are eroding is a large one, continued private ownership of any considerable part of the 20.7 million acres of private land so classed is unlikely to result in the doing of things necessary to protect public interest. Public ownership and multiple-purpose management, with the public paying for what it gets, appears to be the answer. Practically all of the 7.8 million acres that are severely eroded and most of the 12.9 million acres materially eroded should be taken into public ownership, or a total of about 17 million acres.

MINOR WATER-YIELDING AREAS

Approximately 174 million acres of private land classed as of minor water-producing importance is contributing an appreciable amount of silt to major streams. Although these lands produce but a small part of the water of the major rivers, they include some of the most critical erosion areas.

Outstanding and spectacular examples of erosion are the Missouri River "breaks" in Montana, and the Badlands of South Dakota.

Both are relatively small in area, but because of highly unstable natural conditions, enhanced by range use, they combine to contribute a large part of the silt in the Missouri River. This silting can be reduced by conservative use.

A very much larger area of private lands throughout the West and especially on the low-water-yield parts of the Colorado, Gila, and Salt Rivers, and the Rio Grande, makes a less spectacular but even more important erosion-control problem, because their present impaired watershed condition is primarily due to range depletion. Thin mantles of vegetation, loose and unstable soil, and a delicate balance of plants to climate, combine to make maintenance of forage and soil a peculiarly difficult problem. The processes of deterioration and depletion start readily and proceed rapidly and to extremes; whereas rebuilding can hardly be accomplished even under moderate grazing. The range types primarily involved—such as sagebrush-grass, southern desert shrub, salt-desert shrub, and piñon-juniper—are those most susceptible to serious damage by overgrazing, as shown by the existing depletion, which averages 65 percent for these types, in contrast to the average of 43 percent for the remaining range types. A high degree of forage depletion connotes an even higher degree of watershed deterioration. Moreover, the susceptible types are in climatic provinces characterized by high summer rainfall intensity, and are thus peculiarly liable to severe erosion from this source. Studies show, too, that the task of restoring forage and watershed values in these types is difficult and will involve high investments in reseeding and erosion-control devices in relation to grazing values. Coupled with this relatively high cost per acre for restoration is the further characteristic of the named types, that their grazing capacity is so low that generally they are submarginal for private ownership.

That public policy should accept the task of restoring such lands seems obvious, since the silt from them finds its way finally into major reservoirs, already developed as long-term public investments.

The size of the watershed problem at present cannot be more than approximated. It involves large areas of public domain, grazing districts, and Indian reservations, as well as State and private lands.

Of the 174 million acres of private land silting streams, 96 million acres are severely eroded. Undoubtedly as a minimum, two-thirds of the latter area should be acquired by the public, possibly 64 million acres. Most of this land is already submarginal for private ownership because of range depletion or naturally low value. Of the remaining 78 million acres of land materially eroded, part of which is submarginal, the acquisition of one-third by the public would appear to be desirable to assure adequate watershed protection.

TOTAL AREA REQUIRING PUBLIC ACQUISITION

The total area of private land contributing silt to major rivers on both major and minor water-producing areas is, as shown in table 71, 195 million acres. Improved management on private lands, as recommended in a later section, if consummated will overcome unsatisfactory watershed conditions on part of this area; still, on a conservative basis it would appear that approximately 107 million acres of this silt contributing area on both principal and minor watersheds should pass out of private ownership. When this area

is added to the 11 million acres of privately owned nonsilting principal water-yielding areas it would make a total of approximately 118 million acres which should be acquired because of watershed value. This area will include a very large part of the 113 million acres for which public acquisition is recommended on account of submarginality.

CRITICAL WATERSHED LANDS REQUIRING NONUSE BY LIVESTOCK

Since overgrazing has been the primary agency which has caused depletion of the cover and hence impaired watershed values and soil wastage, the primary remedy is to be sought in more moderate stocking. This course may be expected to be effective on most of the 352 million acres of land contributing silt to streams, and now more or less seriously eroded. Earlier discussion has made clear that not all depletion and deterioration are equally rapid, severe, and consequential. Some of the broad types of range, such as the short-grass plains, withstand persistent punishment if not too severe. Such a vegetation mantle may continue under heavy use and neither forage, water yield, nor soil be critically disturbed. Damage, if not too far advanced, can be repaired with comparative ease and speed under moderate use. The foothill type of the Central Valley in California likewise has a high resistance against misuse.

On the other hand, as has been previously mentioned, semidesert types on sloping land are especially susceptible to damage. Likewise, the better plant types are susceptible to further severe damage after they have deteriorated so that most of the fertile top soil has been lost. Under such conditions, rehabilitation under grazing use is extremely slow.

As range types differ in susceptibility to punishment, so do different types and areas vary in their public value for watershed protection. Areas on the Colorado River watershed, where erosive processes are already far advanced, are contributing in a major degree to silting of the Boulder Reservoir. Stopping of such soil losses becomes obviously of the first importance. Similar lands back of the Elephant Butte Dam, likewise pouring mud down, have public value many times greater than their slight value for forage. On the contrary, many areas of flat desert clearly have little or no influence on watershed protection.

Thus nonuse is necessary principally in range areas which have high watershed values and are highly susceptible to damage. Such conditions are primarily concerned with (1) critical parts of badly eroding areas which are causing destructive floods, and (2) areas contributing silt to streams where soils are of such unstable character and vegetation depletion has reached such an extreme stage that any use by livestock would impair the effectiveness of the scant cover now available and cause undue disturbance of the soil. In the latter instance, ordinarily found on semidesert range types, the grazing capacity is naturally so low that, with the depletion which has occurred, the land is now practically if not actually submarginal for grazing use by livestock anyway.

Most of the 11.5 million acres now roughly estimated as needing permanent nonuse lies in the Great Basin and Southwest. Since these areas recommended for nonuse, aggregating but 1.6 percent of the total usable range areas, are principally in the types having

lowest forage values, the reduction in grazing capacity for the range country as a whole is even less than the percentage of total area required for nonuse. It is calculated at 0.3 percent of the total cattle-range capacity and 1.17 percent of the total sheep.

As a matter of fact, so unstable and susceptible to damage are some of the range types that, even though no consequential watershed conservation problem existed, there would be a question whether they should be used for domestic livestock. Establishing a business on such an unsure and vulnerable basis is hardly to be regarded as desirable, either for the individual or the community.

The removal from range use of the 11.5 million acres will for all practical purposes not affect the industry or the economy of the range country.

TO PROTECT WILDLIFE

In many places winter range for big game is the indispensable key to maintaining specific game herds. On the vast majority of the range area, moderate stocking to domestic animals, within the true grazing capacity of the range, will leave room for wild animals, and no blanket removal of livestock is necessary or desirable.

A part of the problem is to remove from range use key areas urgently needed for recreation or game, where the pressure of these inescapable demands is so severe as to make any combination with domestic livestock and other uses impracticable. Where there is heavy camping or other recreational use, for example, or where there is a heavy concentration of hunters, even for a short period, the range livestock business inevitably suffers. Moreover, stock interferes with human use and occupancy, and the unavoidable tension and conflict must on such key areas be resolved by excluding domestic stock. Considerable parts of the high Sierra in California, for example, have for years been without domestic stock for this reason.

Removal of such lands from domestic livestock use in particular localities has been and is inevitable, as competing and inescapable public demands of growing population and growing outdoor recreation develop. For example, 4,240,000 acres of usable range on the national forests have been closed for exclusive use for wildlife and recreation. Some additional areas may need to be closed from time to time as specific problems develop. Other areas, as conditions on adjoining ranges change, may no longer be required for exclusive use and may be opened for multiple use. The areas so affected form a relatively small part of the whole range area, but are critically important where they do exist. Most acute at the present time is the need for shifting from heavy use by domestic livestock which in turn practically excludes use by wildlife, to multiple use on certain areas needed to supplement existing multiple use range. Especially important is the need for additional winter range to supplement the present summer game range on the national forests in many places in the West. This involves both public domain and privately owned lands. Where privately owned range is involved public acquisition usually is necessary. In table 72 are given the best available estimates, both for private and for Federal lands, of the additional area needed to support specific population of game along with lighter use by livestock. The estimates for game, both for public and private land, are by the Forest Service; those for waterfowl areas are by the Biological Survey.

TABLE 72.—Areas needed for use of wildlife ¹
[In thousands of acres; 000 omitted]

State	Public domain	Private land outside national forests	Private land inside national forests	For water-fowl	Total area
Arizona.....	844				844
California.....	1, 219	384	67	11	1, 681
Colorado.....	5, 441	2, 734	337	7	8, 519
Idaho.....	808	260	50	78	1, 196
Montana.....	69	202	210	49	530
Nevada.....	1, 598	13	21	34	1, 666
New Mexico.....	523		396	27	946
Oregon.....	1, 273			120	1, 393
Utah.....	1, 733	471	51	24	2, 279
Washington.....	158			60	218
Wyoming.....	515	234	24	19	792
Nebraska.....				74	74
North Dakota.....				125	125
South Dakota.....	11	145	71	14	241
Texas.....				6	6
Total.....	14, 192	4, 443	1, 227	648	20, 510

¹ No estimates are available for Kansas and Oklahoma.

TO ROUND OUT NATIONAL FORESTS AND GRAZING DISTRICTS

Within the national forests are approximately 10.5 million acres of alienated range lands mostly in scattered relatively small isolated tracts. In other places national-forest boundaries are so located as to divide natural topographic livestock or game range units. Both situations tend to render difficult the application of range management and the conservation of wildlife. It is estimated that approximately 8.9 million acres inside and 10 million acres of privately owned range land adjacent to national-forest boundaries should be acquired by the Federal Government, of which practically 8.2 million acres is in the open forest type and is not accounted for in table 68. Much of it is submarginal for private ownership. Practically all of it is of high public value for watershed protection or wildlife production or both and overlaps with land recommended elsewhere for acquisition for those purposes.

The area needed to consolidate grazing districts on the public domain is not known, but may be large. The program recommended later will, if carried out, greatly improve the chance for most effective management of the districts.

THE NET AREA TO BE ACQUIRED

Public acquisition of range lands now in private ownership has been found to fulfill five broad purposes. These are:

- 1. To retire from crop use and restore to range use low-productivity lands requiring a long period and a cash outlay to restore range values.
- 2. To manage constructively and restore productivity on lower-grade range land, which private ownership tends to exploit and deplete.
- 3. To place under conservative management critical deteriorating watershed areas.
- 4. To make available for use by wildlife key tracts of range required for specific wildlife populations.

5. To round out natural range units on and adjacent to the national forests and to afford them more effective administration for public purposes.

The estimates of total acreage for each of these purposes and classes are restated as follows:

	<i>Acres</i>
Areas to retire from crop use.....	15,000,000
Range areas submarginal for private ownership.....	113,307,000
Range areas for protection of critical watershed land.....	118,000,000
Range areas for use of wildlife.....	6,318,000
Range areas to round out natural units in national forests (including open-forest type).....	18,900,000

If it is assumed that the area in each class coincides not at all with that in other classes, then obviously the total indicated acquisition program is the sum of the five class totals. By definition this is true of the two first items. It is also true of the 8.2 million acres of open-forest type not accounted for in table 68, which is also included in the fifth class total above. The indicated program for these three classes is, therefore, 136.5 million acres.

As to the other two classes of range land, however, the degree of overlapping is not so readily determined. The detailed calculations, not repeated here, show that, State by State, the total of retired cropland, of submarginal range lands and of proposed national-forest acquisitions in the open-forest type practically equals or exceeds the estimated area for protection of major watershed areas and for wildlife range. Without far more extensive field data than are now available, it is impossible to assert whether, acre by acre, the smaller will be included in the greater, although in the main probably they will.

Watershed lands in general would probably be included in the program already suggested, since on the whole they lie in the types most susceptible to mistreatment, and least adapted to private ownership. Doubtless, some areas will need to be acquired for watershed protection alone, but probably these will not be great in comparison to the entire suggested program.

Range lands acquired for watershed protection, because of submarginality, or for wildlife, should also go far in meeting some pressing problems of consolidation. Both on and adjoining the national forests and grazing districts, as already pointed out, are areas of private land, public ownership of which is required to fully realize plans for range management and restoration.

So, with present very approximate knowledge, and with a very large program of public range land acquisition indicated as desirable, a minimum of 125 million acres appears to be a conservative initial program. Critical needs for public ownership of submarginal range and crop lands, for watershed and wildlife protection, and for effective Federal range land administration will doubtless be reasonably well met by such a program.

CHANGE IN USABLE RANGE AREA

The net effect then of these probable changes in form of use is to increase both the area and the grazing capacity of range lands in the range country.

The decrease in range for domestic livestock by closing to grazing the critical watershed area of 11½ million acres is far less in area

than the increase in range by the gradual acquisition of the 15 million acres of privately owned submarginal croplands. The grazing capacity of the latter (3,750,000 animal months) will be so far in excess of that of the area to be closed (1,085,000 animal months) that ample range will be available for any domestic stock temporarily removed from limited areas, or whose present numbers may be slightly reduced, to provide adequate range for wildlife.

PROBLEMS OF PUBLIC OWNERSHIP

THE PROBLEM OF UNRESERVED FEDERAL RANGE LANDS

For range lands on the national forests and for Indian range land a stable policy has been established. A similar set-up is in process of being worked out for 80 million acres under the Grazing Act. But some 82 million acres of public domain beyond the amount already authorized will still be unreserved and entirely unmanaged. Not only that but the old public-land laws still operate to pass into private ownership lands even inferior to millions of acres already patented and now a major problem in the whole range question.

Permanent reservation of all Federal range lands and revocation of land-disposal laws which afford an invitation to trouble are obvious and immediate needs—as other sections of this report show.

THE PROBLEM OF STATE-OWNED RANGE LANDS

All sorts of situations are found in the several range States. Scattered square miles of land, impossible to administer, in some; fairly solid blocks of land in some; and intermediate conditions in others. The nearest approach to a common denominator is in the general policy, largely based on Federal grant laws, to pass State lands to private ownership, to handle them from the real-estate standpoint, as a source of immediate revenue, rather than from the land-management or conservation standpoint as a permanent asset.

On the whole, then, State range land policy has had the same essential defects as the Federal attitude toward the public domain. The results have been similar—a drift of low-grade lands into unstable and shifting private ownership—changing one problem for another with no real progress toward solution.

THE PROBLEM OF TAX-REVERTED LANDS

Records of the location and area of lands which have gone through the process of tax reversion are incomplete and fragmentary. That millions of acres have for all practical purposes been abandoned by private ownership, through persistent tax-delinquency, even though the counties or the States have not asserted title, is well known. Naturally, during a continued depression many properties are tax-delinquent for several years, through inability to pay taxes rather than through lack of intent. The fragmentary available figures thus fail to afford a true picture, even for the scattered areas covered, of the extent of deliberate tax reversion.

It is not always fully appreciated that owners who have thus abandoned lands have in most cases already gone through all the

devices and struggles which ingenuity can devise. To repass such lands to other private owners, even at reduced valuations—and this is the common practice and purpose of local government—generally means a repetition of the losing struggle, with only a different owner. In many if not most cases the very process of abandonment not only furnishes a final and convincing decision as to submarginality of the lands for private ownership but, by inference, gives an answer as to their future disposition. Clearly, low-grade range lands that are in fact abandoned should pass to local public ownership as a first step in recognition of the fact that they are unsuited for private ownership. The general hesitancy and delay in formal seizure of title has been due to failure to accept the fact that such lands are better off in public ownership. A change in this viewpoint adequately expressed in State laws and in local administrative action is urgently needed.

But, because in this process the county loses in tax base and acquires a property requiring cash outlay to restore, it is highly improbable that many counties will be financially able to retain any ownership that involves constructive management. A second phase is then the passing of title to the State on an equitable basis of recompense to the county government by the State. Whether the State in turn consolidates, retains, and manages such lands or passes them to Federal ownership is not the main question. It is rather a more ready acceptance of title by the public to lands clearly unsuited for private ownership on a nonexploitation basis of use.

DIVISION OF RESPONSIBILITY BETWEEN STATES AND FEDERAL GOVERNMENT IN RANGE-LAND OWNERSHIP

Of the 125 million acres which are estimated as the minimum area to be acquired and managed by public agencies, much the greater part, certainly not less than 90 percent, is low-grade land. The prime reason for its acquisition is to restore productivity and manage conservatively—the very things which private ownership cannot do.

The implication of the very method of estimating the area to be acquired is that the lands will not yield a large net income, if any. The justification for public ownership will be the restoration and preservation of basic wealth and opportunities for private enterprise and for support of population, and in addition the protection of public values in watershed and wildlife. A part, and probably a large part, of the income to governmental treasuries will come indirectly, chiefly through operation of the income-tax laws.

Since the true grazing capacity, and therefore true rental value, of such lands is low, since they are depleted to varying degrees, and since they will require varying periods of nonstocking or light stocking to restore productivity, it follows that as an investment they are unattractive.

Federal laws have colored the attitude of the Western States toward their State-owned range lands so that the dominant purpose has been to obtain the maximum immediate cash return, and to worry little about restoring or even maintaining productivity. No State, for example, has created a professional range-management

service, or has utilized fully the technical knowledge and ability of its Agricultural College staff in handling its range lands. Rather, the lands have been entrusted to State agencies dominated by the immediate financial viewpoint.

But leaving aside the indications of past State action, where public values of an interstate character, such as watershed protection, are involved, it is difficult for a State to express its interest through restraint in managing its lands. Many millions of acres destined for public acquisition are vested with such public value. They naturally will be managed by the Federal Government, because of the interstate values on most of the range lands, and because the major return will be obtained indirectly through maintenance of basic wealth, rather than directly in cash income from the properties.

Moreover, it is inevitable that the bulk of the acquired lands will require cash outlays for rehabilitation, probably for some time in excess of income, particularly since a large area is abandoned dry-farmed land, requiring substantial cash outlay for rehabilitation. Not many of the Western States can reasonably be expected to make such outlays on a large scale, since the burden of carrying existing State obligations is too great to permit branching out into new ventures to any high degree.

The other side of the picture is that the States are already in the range-land business, because of holdings of land grants and properties acquired through foreclosure. If, as suggested in the section on legislation, tax-reverted lands are vested in the States, the State ownership of range lands will increase further. It is unquestionably desirable that the States as partners should share with the Federal Government the very large job of public ownership and management of range lands.

Just as in appraising the opportunities for successful private ownership and management in the less favorable range types, it was assumed that a certain part of the total in each type was sufficiently superior to justify private ownership, so, even though range lands in public ownership are on the whole unattractive as a money-making investment, some part of the whole should prove superior to the general level.

As an operating principle in working out the sphere of influence in the suggested acquisition program of the several States and of the Federal Government, it is desirable to leave to the States the most favorable part, with the Federal Government taking over what neither the private owner nor the States can handle.

Since this report represents the first attempt to appraise the size of the public ownership job—an appraisal that may well be markedly low, and one requiring much more study and testing—it would be altogether premature to attempt a fine-spun division of the job between State and Federal Governments. There is abundant room for both agencies.

THE PROCESS OF SOLUTION OF OWNERSHIP AND USE PROBLEMS

A group of overlapping and interwoven ownership-and-use problems clearly lie close to the core of the problem of restoring and stabilizing the range. It is equally evident that no single method

and no single class of owner can unaided expect to solve difficulties which have developed from past action and inaction by all. The solutions will come from many modes of action, both private and public. In such a partnership venture, a great deal of joint study, a great deal of good sense, and a genuinely cooperative approach are requisite.

A broad and accepted division of responsibility which would leave first to private owners, second to the States, what each can do, and lastly to the Federal Government what remains, is an obvious and realistic approach to the whole problem.

The Federal Government has already recognized the existence of range-land ownership problems and developed several modes of action which can help effectively in their solution. Therefore no major departures in the theory of government need to be considered. Among means of action, acquisition stands out, not as an exclusive or theoretically superior method but rather as one that strikes directly at problems of private lands with high public values, and of lands submarginal for private ownership.

Clearly the first need in a progressive attack is to initiate a range-land acquisition program of the order of magnitude apparently required. Whether the true size of the task is higher or lower than estimated should not obscure the fact that it is a very large and urgent task. In any event, many years will be required to carry out such a large task and one needing such large capital investments for purchase and rehabilitation of the land. More exact estimates, and far more exploration of the fields for action by different agencies of government, are clearly needed, but this fact should not halt a prompt start. Nor should the obvious but undetermined relationship between land-use adjustments in the range country and in the central agricultural regions be a deterrent to prompt action. Such questions can be cooperatively studied and worked out as the acquisition program develops.

For over and above the factual questions for which final answers are not available stand the clearly established facts that the range is the permanent key to western agriculture and western economy; that it has been seriously depleted through overuse and reduced by uneconomic private ownership; that its problems can be solved only through aggressive public action; and that further delay is intolerable.

That this first attempt to approximate the size of the public range-land ownership job results in an answer of large size means simply that the job is a large one. The number of acres acquired in different types and States will probably vary considerably from the estimates. The process of working out acquisition programs, once they are established, takes care of such problems. Public agencies establish bases of valuation which are strongly conservative—since if questions of wasting public money arise, the program will surely cease. Private owners, with often more money tied up in land than is offered by the public, will not sell unless convinced that the losses thus accepted will be more than offset by gains in business efficiency and financial flexibility. So the size and location of public acquisition is quickly determined, not by studies or laws, but by private ownership itself. The need is to start acquisition on a programmed scale commensurate with the job ahead.